

Fast closing valv for a compressible fluid.

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Abstract

1. A fast-closing shutoff valve with a concentric axial flow, comprising: a stationary body (1) comprising an inlet (2) for compressible fluid under inlet pressure (P_o) and an outlet for compressible fluid (3) supplied with a seat (20), a stationary part (6) disposed inside the body (1) and connected to said body (1) by ribs (7), a movable part (11) sliding along the axis of said seat (20), resting on the stationary part (6) and resting by an obturation surface (13) on said seat (20) in the closed position, said movable part (11) defining a cavity (15) with the stationary part (6) and being permanently submitted to a force tending to apply it on said seat (20), this cavity (15) being apt to be brought either to the inlet pressure (P_o) through an orifice (27) in a wall of the stationary part (6), or to a pressure (p_2) which is lower than the inlet pressure (P_o), this lower pressure (p_2) being sufficiently low to permit the lifting of the movable part (11) from said seat (20) in order to put the valve into the open position, the lower pressure (p_2) being applied to the cavity (15) through a channel, the force tending to permanently apply the movable part (11) to its seat (20) being obtained at least in part by a system of springs (19) situated inside the cavity (15) and backed-up at one end by the stationary part (6) and at the other end by the movable part (11), characterized in that the inlet pressure (P_o) is applied to the cavity (15) through a stationary duct (29) which comprises an auxiliary valve (30), and in that the lower pressure (p_2) is applied to the cavity (15) through said channel which is constituted by another stationary duct (32) which comprises another auxiliary valve (34), said auxiliary valve (30) comprising a fluid inlet (36) at the pressure P_o which can be closed by a movable head (37), this head comprising three parts, in particular a hemispherical part (38) ensuring the actual closing of said inlet (36) when said auxiliary valve (30) is closed, a constricted part (39) which, during the opening of the auxiliary valve (30), moves through said inlet (36), permitting a strong fluid flow in said inlet (36), and a widened part (40) which is situated in said inlet (36) when the auxiliary valve (30) is completely open, permitting a reduced fluid flow in said inlet (36).

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